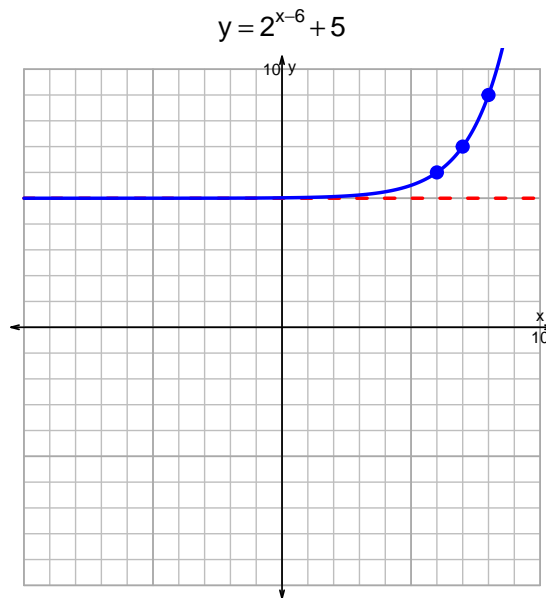
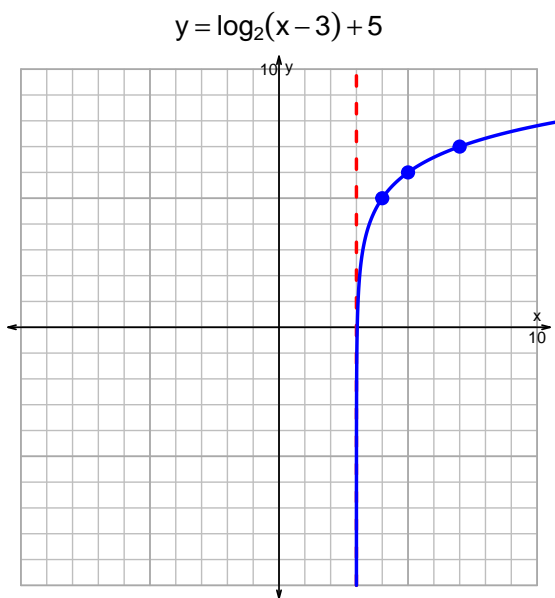


Name: _____

Date: _____

s18: EXP LOG (SLTN v358)

1. (10 pts) Graph $y = \log_2(x - 3) + 5$ and $y = 2^{x-6} + 5$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-11 = \left(\frac{-4}{7}\right) \cdot 10^{3t/5}$$

Divide both sides by $\frac{-4}{7}$.

$$\frac{11 \cdot 7}{4} = 10^{3t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 7}{4}\right) = \frac{3t}{5}$$

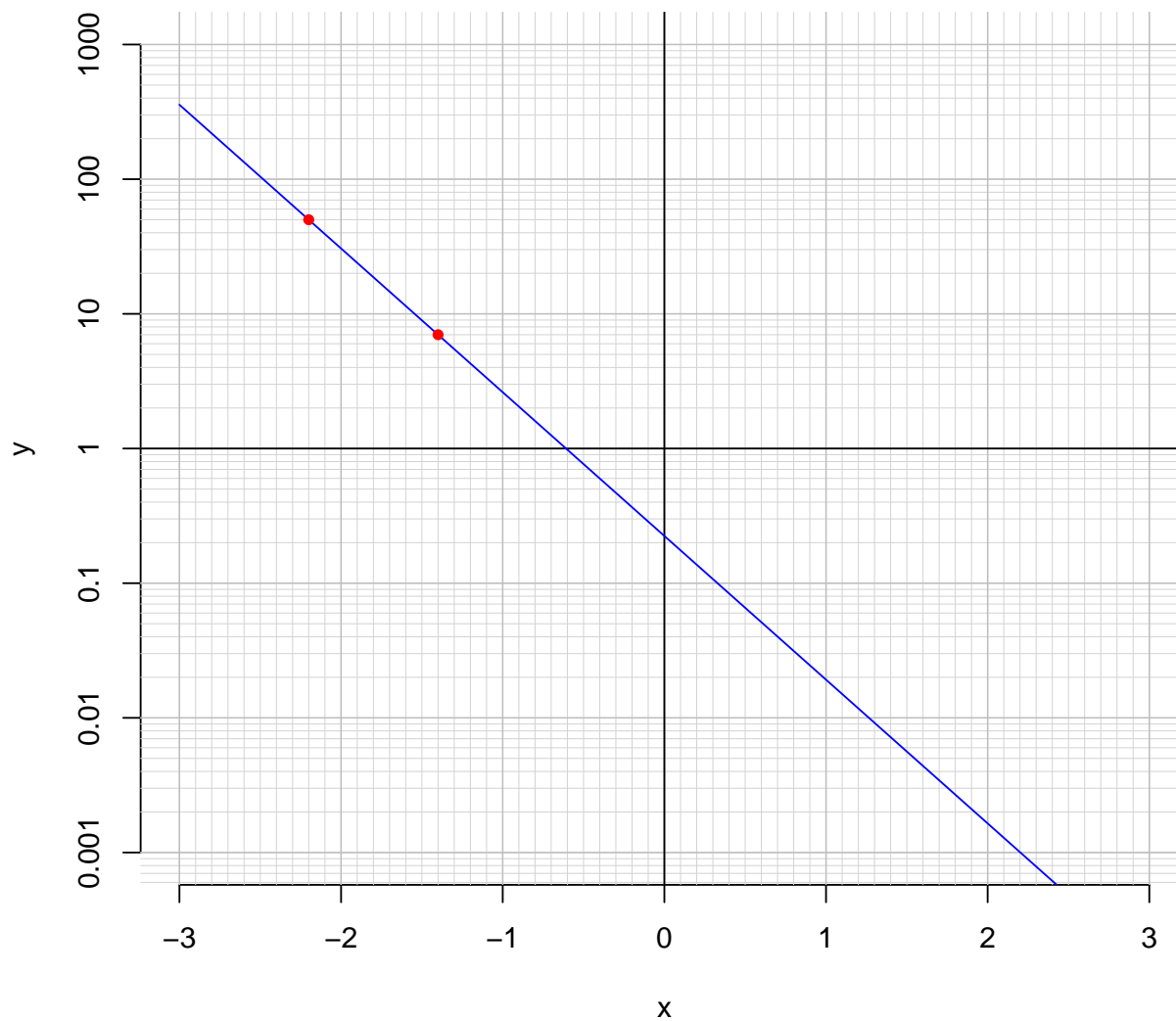
Divide both sides by $\frac{3}{5}$.

$$\frac{5}{3} \cdot \log_{10}\left(\frac{11 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{5}{3} \cdot \log_{10}\left(\frac{11 \cdot 7}{4}\right)$$

3. (10 pts) An exponential function $f(x) = 0.224 \cdot e^{-2.46x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-1.4)$.

$$f(-1.4) = 7$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{2.46} \cdot \ln\left(\frac{x}{0.224}\right)$$

Using the plot above, evaluate $f^{-1}(50)$.

$$f^{-1}(50) = -2.2$$